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Fall Management in a Mixed Neuroscience Unit: The Predictive Ability of the Morse Fall Scale

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BACKGROUND

Falls are a serious incident impacting patient safety, quality of healthcare delivery and overall hospital outcomes. Each year in the United States, approximately 700,000 to one million patients experience a fall in the hospital setting (Currie, 2008). The neuroscience population is known to have the highest fall rates of any population (Hester & Davis, 2013). Tracked by agencies such as the Joint Commission (TJC) and National Database for Nursing Quality Indicators (NDNQI), falls are an indicator of hospital performance and have a significant financial impact; falls with patient injury increase length of stay and thousands of dollars in increased, non-reimbursed hospital costs.

PURPOSE

One of the biggest challenges in fall prevention is utilizing the appropriate instrument to accurately identify patients at high risk for falling. **The purpose of this retrospective study was to investigate the accuracy of predicting falls of the validated Morse Fall Scale (MFS) in a mixed neuroscience unit.**

METHODS

Retrospective data was collected on patients admitted to the neuroscience unit for a 6 month period (May 1, 2014 to December 1, 2014) to determine the incidence of falls, faller types and evaluate the MFS predictive ability. In total, 80 patient charts were reviewed, 40 patients who fell within the specified time frame were matched to 40 patients who did not fall during the hospitalization. Demographics included age, gender and MFS immediately prior to fall.

RESULTS

There were 40 fallers that were matched by age and gender to non-faller controls. Overall, 30% of the fallers and the non-fallers were women. The table below gives the descriptive statistics for age for the fallers and non-fallers.

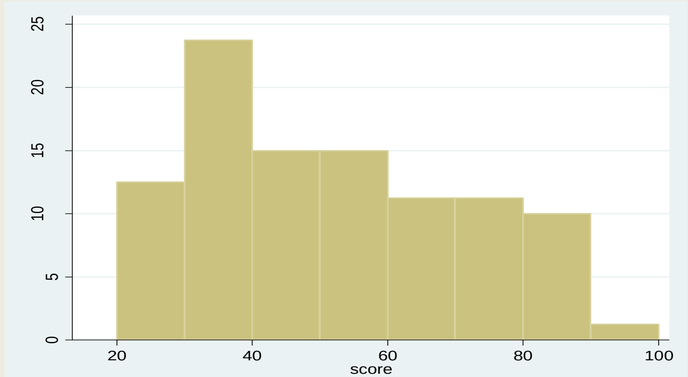
Group	Count	Mean	SD	Median	25th percentile	75th percentile
Non-fallers	**40**	**66.4**	**14.5**	**68.5**	**55.0**	**76.5**
Fallers	**40**	**66.0**	**15.7**	**68.5**	**55.0**	**77.0**

The table below gives the descriptive statistics for the Morse scale score for the fallers and non-fallers.

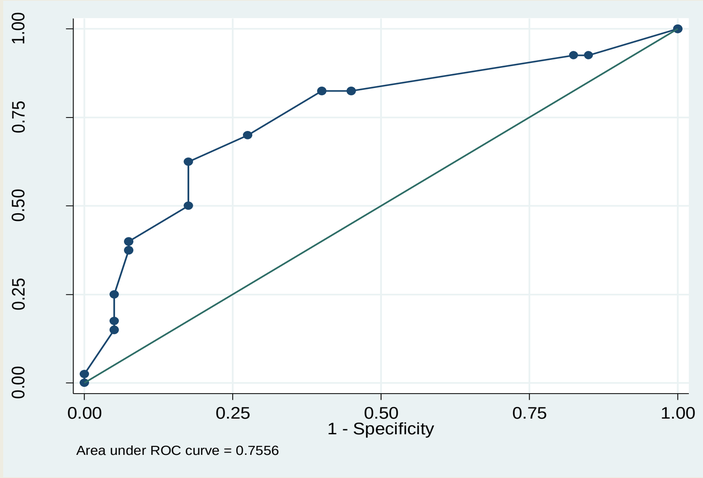
Group	Count	Mean	SD	Median	25th percentile	75th percentile
Non-fallers	**40**	**41.4**	**16.0**	**35**	**35**	**50**
Fallers	**40**	**58.4**	**19.7**	**57.5**	**45**	**72.5**

RESULTS (cont'd)

The distribution of the scores showed a slight right asymmetry. A Wilcoxon rank test showed a significant difference in the median scores between the fallers and the non-fallers ($z = 3.975$, $p < 0.001$), the fallers having a higher median score than the non-fallers.



A preliminary ROC curve indicates that the area under the curve (95% CI for AUC [0.641;0.840] is significantly larger than 0.5 (an area under the curve of 0.5 would be equivalent to tossing a coin to predict a fall).



RESULTS (cont'd)

The suggested fall risk scores for the MFS are: <25: low risk, 25-45: moderate risk and >45: high risk. It appears any MFS greater than 45 bears a much lower sensitivity (less than 80%). In fact, a MFS scored as moderate risk (25) could generate false positives, with only 6 of the 40 non-fallers (15%) having a score below 25. The following table shows the sensitivity and specificity of various fall risk endpoints for the scale. It appears the endpoint of 45 for high risk of falls is appropriate; any higher endpoint has a much lower sensitivity (less than 80%).

Endpoint	Sensitivity	Specificity	Correctly classified	LR+	LR-
>=25	92.5%	15.0%	53.8%	1.09	0.50
>=35	92.5%	17.5%	55.0%	1.12	0.43
>=40	82.5%	55.0%	68.8%	1.83	0.32
>=45	82.5%	60.0%	71.3%	2.06	0.29
>=50	70.0%	72.5%	71.25	2.55	0.41

SUMMARY OF CONCLUSIONS

Overall, the MFS has adequate screening qualities, however a higher specificity is desirable. Due to inconsistency of MFS scores by the end-users (staff nurses) and upon further review of past and current fall literature, the neuroscience population would benefit from further research to further examine the specificity, sensitivity and variability of fall risk assessments; this would greatly impact patient safety and influence quality of care provided.

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